

EXTREME WEATHER

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Here, Stephen explores how finding out about how extreme weather impacts on people's lives can fire pupils' imaginations. The examples he selects focus on, and provide a natural opportunity to develop, UK locational knowledge. However, because extreme weather affects the whole planet, this cross-curricular topic could be given an international flavour.

A short distance from where I live there is a hamlet called Knowlton. It is a tiny place, consisting of an old manor house, a church and a few houses. Although there is not much to see in the way of buildings, Knowlton has a place in English history. Inside Knowlton Church is a memorial to Sir Cloudesley Shovell, who has the unenviable reputation of being

in charge of the English Fleet when it ran aground in a storm off the Isles of Scilly in 1707. It is believed that the reason for this terrible naval disaster, which cost 2000 lives, is that Sir Cloudesley was unable to ascertain his longitude. It would be many decades before the invention of an accurate maritime clock would enable sailors to establish the difference between Greenwich Mean Time and local solar time thereby solving the problem. Nevertheless, the 1707 disaster certainly spurred the quest for a solution and it is just one fascinating example of how geography, meteorology and science interlink (Figure 1).

Britain has always been affected by extreme weather events. Finding out about them and the different way that people have responded makes a fascinating story. You may not live near a village like Knowlton, but there are likely to be older people in your area who will share their memories. Some may remember the terrible winter of 1947, when there were

snowdrifts 5m deep on the Pennines and three months of frost and ice across the country. Then there was the smog of 1952 when the air in London was so thick with fumes that pedestrians lost their way and, in some places, people were unable to see their feet. A year later, in 1953, more than 300 people drowned in the floods that engulfed the east coast of England, from Lincolnshire to Kent. The photographs taken at the time show the scale of the devastation. The event was also commemorated in artwork and tapestries (see Figure 2).

These are historical events, but there are also more modern ones. For example, some teachers will be able to give first-hand accounts of the great storm (sometimes wrongly called a hurricane) that brought winds of over 160kph (100mph) to south-east England in 1987, uprooting 15 million trees in the process. In the present century, the summer of 2003 brought the highest temperatures ever recorded to many parts of Britain and led to thousands of premature deaths. A prolonged period of very low rainfall from 2010 to 2012 caused extensive damage to crops and resulted in hosepipe bans.

In recent years floods and strong winds have been a particular concern. For example, the winter of 2013–14 brought a sequence of storms that flooded areas such as the Somerset Levels for several months. It also led to cliff falls in south Devon, which destroyed the railway line at Dawlish and cut off rail services to Cornwall for many months. In winter 2015–16, prolonged rainfall in northern England caused the rivers Tees and Eden to burst their banks, flooding Carlisle and sweeping away bridges (see Hatwood, page 14 for another example). Advance warning of an approaching storm can help people take precautions against severe weather, and the UK Met Office has now begun naming such storms – a method that seems to better alert the public.

Pupils enjoy finding out about extreme weather events and the havoc that they have caused in the past. Plenty of information is available via the internet, and old photographs and newspaper reports do much to capture the urgency that people felt at the time (see web panel). You can explore the different responses through role play and drama, and opportunities for writing in different modes and registers is immediately apparent. Such studies are an engaging and motivating way to introduce a topic

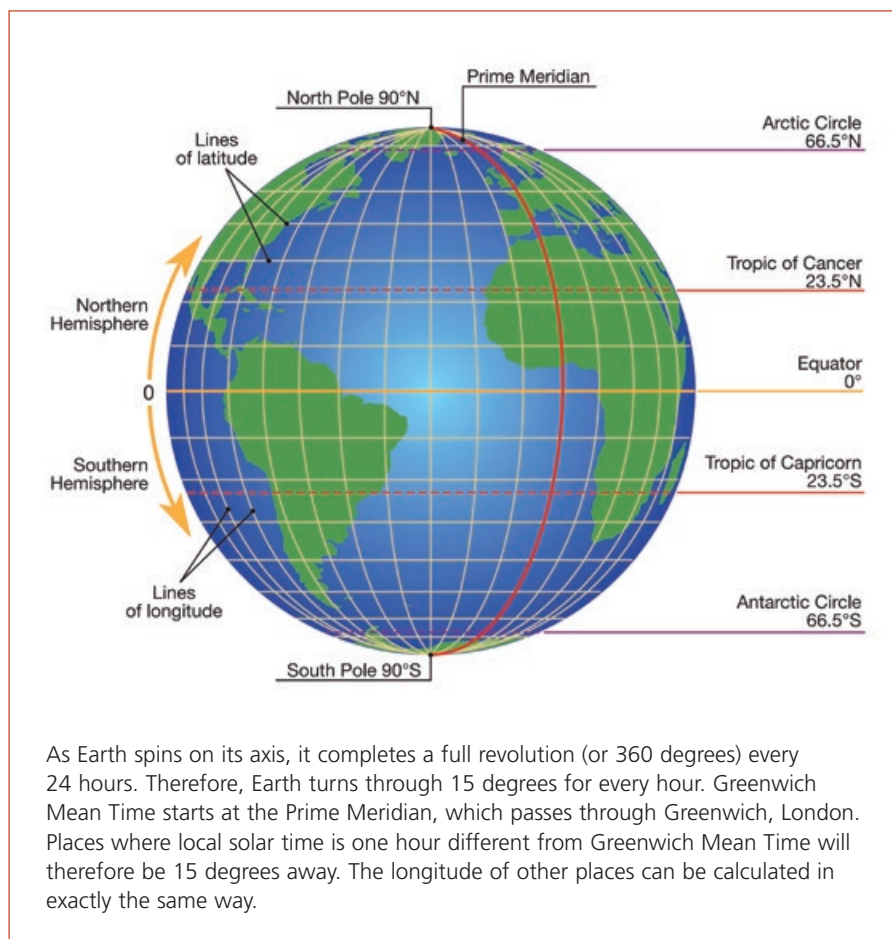


Figure 1: How time is used to measure longitude.



Figure 2: The 1953 flooding commemorated in a tapestry. Photo © Stephen Scoffham.

on extreme weather, but they are only a starting point. The following suggestions can help you go further.

Heat waves, droughts and storms

Ask the pupils to select a single past weather event to study in detail. As part of their investigation they should draw or download maps to show the areas affected. They should include statistics about the temperature, wind and precipitation and so forth. Challenging them to explain what caused the event they are studying will lead naturally into a discussion about possible prevention measures.

Recording local weather events

Keeping local weather records usually appeals to pupils, but extreme weather events certainly add interest. Get pupils to measure exactly how hot, cold or wet it has been as a result of specific event. Ask them to talk about how they feel about the weather they have just experienced. Have other areas of the country been equally affected? Thunderstorms are liable to fire their imagination, but remind them that not all weather phenomena are violent or damaging: the rainbows, dramatic sunsets and unusual cloud formations that attract our attention are also ideal for celebrating through art and music.

Weather memories

Arrange for the pupils to talk to local residents about their memories of extreme weather events and to ask about how they affected the residents – you could contact a local Old People's Home or the Warden in charge of sheltered housing. As well as contributing to an oral history project, the pupils can compile all of the accounts into a short video presentation to share with those people who participated.

- In the summer, a heatwave named Lucifer hit southern Europe. In some places temperatures rose above 40°C and eleven countries issued 'danger' warnings.
- On 22 August, after heavy rainfall upstream in the north of the country and in India, more than one-third of Bangladesh became submerged. It is estimated that 3.9 million people and more than 500,000 were affected by the floods, which were thought to be the most severe in 100 years.
- In early September, Hurricane Irma left a trail of destruction across the Caribbean. The Category 5 hurricane brought with it 300kmph winds, which destroyed nearly every building on the island of Barbuda where Irma first made landfall.
- On 21 October, 250 the North California wildfires – made worse by the tinder-dry conditions – burned across nearly 100ha of land and destroyed 8900 buildings.

Figure 3: Three months of extreme weather across the world in 2017.

Worst weather

Divide the pupils into groups and ask each one to research a different type of extreme weather. The groups' task is to convince the rest of the class that their particular type of weather is the 'worst'. Give this activity an international flavour by including events elsewhere in the world (e.g. bush fires in Australia, dust storms in Beijing, the 'haze' that engulfed Singapore in 2015; see Figure 3 and web panel).

Freak storms and floods

Some extreme weather events are either highly unusual or affect only a very small area. The tornado that swept through Birmingham in 2005, for example, carved a 1km-long path through the city but left other areas unscathed. Similarly, the 2004 floods in Boscastle and Crackington Haven in Cornwall were the result of a localised storm, and villages elsewhere on the coast were spared. Get the pupils to investigate different freak weather events: gales, lightning and hailstorms are good starting points.

Individual events tell us very little about long-term trends, but questions that keep cropping up concern the impact and frequency of extreme weather events. 'Are storms more violent now than in the past?', 'Are winters getting warmer?' and 'Is flooding getting worse?' While there can be no precise answers, we know that global temperatures have risen by approximately 1°C from pre-Industrial levels, which means there is more energy in the global climate system. Increasingly violent and unpredictable weather seems likely. Rather strangely, if ocean currents are disrupted, global warming might bring lower rather than higher temperatures to the UK for a while. Whatever happens, we need to fasten our safety belts for uncertain weather in the future.



WEB RESOURCES

Past weather events in the UK: www.metoffice.gov.uk/climate/uk/interesting#y2017

Ten Worst Weather events: www.bbc.co.uk/timelines/zcwj2hv

The Conversation on extreme weather events worldwide: <https://theconversation.com/2017-the-year-in-extreme-weather-88765>

UK mapped data for 300 UK climate stations: www.metoffice.gov.uk/public/weather/climate/u10unds1y

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